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SCIENCE.

FRIDAY, APRIL 24, 1885.

COMMENT AND CRITICISM.

THE WORK of the commissioners of the state reservation at Niagara has advanced to the point that the bill making the appropriations for taking the necessary lands has passed the legislature, and only awaits the signature of the governor. There comes a suggestion from Mr. S. A. Lattimore of Rochester, to the effect, that, in the event of the acquisition of the land around the falls by the state, a museum should be erected there, to be devoted exclusively to the elucidation and explanation of the physical and geological history of the place. Its walls should be built of rocks from local quarries; its rooms should contain only such objects as possess a true scientific value; mere curiosities, and specimens from other regions, should be carefully excluded; every thing should have as direct a bearing as possible on the history of the falls. Samples of the famous rock series from the gorge, with its fossils and minerals; plants and animals from the neighboring country; and maps and models of the falls and the chain of great lakes, — constitute the chief parts of the museum as described by its projector.

The plan is certainly a good one, and may be successfully carried out at no great cost. Such a museum could be made attractive as well as instructive, and few visitors would fail to see and profit by it. The exclusion of curiosities, such as too often encumber museums, is well advised; but to our mind the collection needs two additional elements in order to reach its full value, — waterfalls and gorges in other parts of the world should be illustrated by views, maps, models, and descriptions, so that the inquiring stranger might gain a true estimate of Niagara; and the exhibit should be described in some detail on the

labels. Few collections that are open to the public have sufficient explanation accompanying them; and visitors are, as a rule, forced to be discontented with mere names instead of reading well-stated meanings of what they see. Such descriptive labels might even be supplemented by brief papers prepared by specialists, and accessible to the small share of visitors who care to make some study of the place. We commend Mr. Lattimore's project to the careful consideration of the commissioners.

ON APRIL 16, Gov. Harrison (who is now *ex officio* a member of the Yale corporation, and who was, until his election as governor, one of the incorporators elected by the Yale alumni) signed the bill by which the state of Connecticut terminated its contract with the Yale observatory for furnishing standard time. The legislation on this subject has had a history which strikingly illustrates the danger of having scientific institutions depend on popular assemblies for annual appropriations for their support. When the 'standard time' law was enacted, in 1881, Connecticut had its full quota of local times. The confusion in that manufacturing and busy community was so marked, that the Yale observatory had comparatively little difficulty in guiding an exceptionally able legislature to a unanimous decision in regard to establishing a standard time. The observatory, with an admirable plant, has conducted the service with uniform efficiency and accuracy.

To the surprise of its officers, some two months since, the appropriation committee reported to the Connecticut house of representatives a bill repealing the appropriation by amending the original act. This report was made without a single hearing on the merits of the case. When it became known that the committee intended to push the report, the friends of the observatory, and those interested

in the service, made a determined effort to defeat it, which was only so far successful as to defeat it in the senate once of the three times it was there considered after leaving the house of representatives, where it was passed by a small majority. By some it is believed that the whole proceeding originated in republican party warfare against the 'mugwumps' and free-traders at Yale college. This much is certain, that the ordinary friendliness which might exist between the college and the state was lacking in the case of many members of the general assembly. The governor, who was known to be personally strongly in favor of the observatory service, found himself in a delicate position, and doubtless, in the absence of any thing unconstitutional in the repeal, took the only course open to him which would be open to no misconstruction.

PROFESSOR JAMES GEIKIE of Edinburgh contributes a very valuable article on the physical features of Scotland to a recent number of the new Scottish geographical magazine. It is illustrated by a beautiful little orographical map of Scotland by J. Bartholemew, in which the physical relief is finely brought out. Commenting on this, and on the excellent maps of the Ordnance survey on which it is based, Professor Geikie concludes with the following paragraph:—

"With such admirable cartographical work before them, how long will intelligent teachers continue to tolerate those antiquated monstrosities which so often do duty as wall-maps in their schoolrooms? Surely more advantage ought to be taken of the progress made within the last thirty or forty years in our knowledge of the physical features of our country. It is time that the youth in all our schools should be able to gather from their maps an accurate notion of the country in which they live; that they should see the form of its surface depicted with an approach to truth, and learn something more than that so many principal rivers flow in so many different directions. With a well-drawn and faithful orographical map before him, the schoolboy would not only have his labors lightened, but geography would become one of the most interesting of studies. He would see in his map a recognizable picture of a country, and not, as at present is too often the case, a kind of mysterious hieroglyphic designed by the enemy for his confusion."

We copy this with hearty emphasis and approval, for it points out precisely the difficulty under which our scholars labor. But while in Great Britain, and in continental Europe generally, the surveys from which good school-maps might be constructed are already well advanced or completed, in our country they are either neglected or only just begun; and it is even still almost always a difficult matter to persuade state legislators, from whom appropriations flow, that good maps are needed. It is no exaggeration to say that the educational value of such maps as are now in preparation in New Jersey and Massachusetts is alone more than their cost to the state; and we shall watch for the better teaching in the common schools, that must follow their completion, with as much interest as for the inception of similar work in other states.

LETTERS TO THE EDITOR.

Centrifugal force and the supposed polar ice-cap.

IN your issue of March 27, you publish an article by Dr. Franz Boas, upon 'Mr. Melville's plan for reaching the north pole,' in which there are some statements that should not pass unchallenged. They occur in the discussion of the effect, upon the supposed 'ice-cap,' of centrifugal force due to the earth's rotation.

The formula for calculating the effect of centrifugal force is a well-known and simple one, $C = \frac{wv^2}{32.16r}$, in which v = velocity in feet per second, r = radius in feet, w = weight of the mass acted on, and C is the centrifugal force in pounds. Apply this to latitude 85° , r = 345 miles, or 1,821,600 feet, and v = $132\frac{1}{2}$ feet per second.

Then, if we take a cubic foot of ice, $C = \frac{1}{10}$ of a pound, or about one hundred grains of pull, away from the pole, southward, upon each cubic foot of ice, — a force which is approximately one four-thousandth of the weight of the body acted upon, instead of being thirty thousand times that weight.

Whether the ice is one foot thick, or one hundred feet in a single block or in a broad or heaped mass, makes no difference in the result; for each unit of mass acts independently of each other unit. So far as centrifugal force goes, it could neither make nor mar the hypothetical 'ice-cap.'

E. W. WETMORE.

Essex, Conn., April 11.

In the controversy between Mr. Melville and Dr. Boas respecting the supposed polar ice-cap, both parties appear to take an erroneous view of the action of 'centrifugal force.'